



POURING PERFECTION

# FILTROSHUTTLE MINI SHUTTLE

## SERVICE MANUAL



**Marco Beverage Systems Ltd.**

63d Heather Road,  
Sandyford Industrial Estate,  
Dublin 18,  
Republic of Ireland

Ireland Tel: (01) 295 2674

Ireland Fax: (01) 295 3715

UK Tel: (0207) 274 4577

UK Fax: (0207) 978 8141

# CONTENTS

	PAGE
<b>INTRODUCTION</b>	3
<b>SERIAL NUMBER &amp; MACHINE MODEL INFORMATION</b>	3
<b>GENERAL DESCRIPTION</b>	4
<b>STANDARD INSTRUCTION MANUAL</b>	5
<b>BREW CALIBRATION INSTRUCTIONS</b>	9
<b>TEMPERATURE CALIBRATION INSTRUCTIONS</b>	12
<b>ASSEMBLY DRAWINGS</b>	
PANEL REMOVAL	13
CONTROL PCB ASSEMBLY	14
LOWER INTERNAL PARTS	15
UPPER INTERNAL PARTS	16
DESCALING, ELEMENT AND PROBE REPLACEMENT	17
SPRAYHEAD ASSEMBLY	18
<b>TROUBLESHOOTING GUIDE</b>	19
<b>WIRING DRAWINGS</b>	
FILTRO/MINI SHUTTLE 5.6kW SINGLE PHASE	20
FILTRO/MINI SHUTTLE 2.8kW SINGLE PHASE	21
FILTRO/MINI SHUTTLE 5.6kW THREE PHASE	22
<b>SPARE PARTS LIST</b>	23

## INTRODUCTION

The information provided in this manual is intended to assist in the installation and maintenance of the Marco Filtro Shuttle & Mini Shuttle. Please read the instructions carefully to prevent accidents and ensure an efficient installation.

This manual is not a substitute for any safety instructions or technical data affixed to the machine or its packaging. All information in this manual is current at the time of publication and is subject to change without notice.

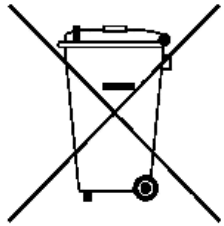


Only technicians or service providers authorised by Marco should carry out installation and maintenance of these machines.

Marco accepts no responsibility for any damage or injury caused by incorrect or unreasonable installation and operation.

## SERIAL NUMBER & MACHINE MODEL INFORMATION

Every unit will have a rating plate with a machine serial number. This manual is intended for machines built during and after October 2010, these are machines with a number 1010XXXX or later. For machines built earlier than this date you must obtain an older edition of this service manual.

The first four digits of the serial number denote the month and year of manufacture. The remaining four digits represent a factory assigned sequential serial number for that year. See example below. This machine was made in November 2007 and was machine number 8521 in that year.

MODEL:	<b>FILTRO SHUTTLE 5.6kW</b>	
SERIAL NO:	<b>11078521</b>	
WATER INLET		
RATED VOLTAGE:	<b>230 V a.c.</b>	PRESSURE: <b>35-350kPa</b>
RATED POWER INPUT:	<b>5.6 kW</b>	IP NUMBER: <b>IP 21</b>
<b>MARCO BEVERAGE SYSTEMS Ltd.</b>		
TEL: UK: 0207 274 4577 DUBLIN: 01 2952674		

## GENERAL DESCRIPTION

1000650 FILTRO SHUTTLE 5.6kW/ 1000655 MINI SHUTTLE 5.6kW		
Electrical	Connection	5.6kW,230Vac c/w 1.5m flex
Plumbing	Fittings Pressure	0.75" BSP Food grade inlet hose supplied 5-50 psi (35-345 kPa)
Dimensions	Height <b>FILTRO SHUTTLE</b> Height <b>MINI SHUTTLE</b> Width Depth (footprint on counter) Depth (depth of full machine & lid) Depth incl. Marco Urn 1700174	920mm 705mm 310mm 510mm 665mm
Performance	<u>Hot Water (if tap is installed):</u> Immediate Draw Off: Total Recovery rate at: 5.6KW	400ml + 0.9 litres/minute 0.9 litres/minute

1000651 FILTRO SHUTTLE 2.8kW/ 1000656 MINI SHUTTLE 2.8kW		
Electrical	Connection	2.8kW,230Vac c/w 1.5m flex & moulded plug
Plumbing	As above	
Dimensions	As above	
Performance	<u>Hot Water (if tap is installed):</u> Immediate Draw Off: Total Recovery rate at: 2.8KW	400ml + 0.45 litres/minute 0.45 litres/minute

# marco



POURING PERFECTION

# FILTRO SHUTTLE

# MINI SHUTTLE

INSTRUCTIONS FOR MODELS

## FILTRO SHUTTLE 5.6kW

(P/N: 1000650 – 5.6kW and 1000651 – 2.8kW)

(P/N: 1000650MJ – 3.6kW 200V)

## MINI SHUTTLE

(P/N: 1000655 – 5.6kW and 1000656 – 2.8kW)

**Water Pressure :** 5 - 50 psi (min.-max.) 35 - 345 kPa (min.-max.)

**Water Flow Rate :** 2 Litres per minute minimum.

<b>Marco Beverage Systems Limited.</b> 63d Heather Road, Sandyford Industrial Estate, Dublin 18.	<b>Marco Beverage Systems Limited.</b> Shire House, Strixton Manor, Strixton, Wellingborough, Northants, NN29 7PA
Ireland Tel: +353 (0)1 295 2674 Ireland Fax: +353 (0)1 295 3715 email: <a href="mailto:sales@marco.ie">sales@marco.ie</a> <a href="http://www.marco.ie">www.marco.ie</a>	UK Tel: +44 (0)2072 744 577 UK Fax: +44 (0)2079 788 141 email: <a href="mailto:sales@marco-bev.co.uk">sales@marco-bev.co.uk</a> <a href="http://www.marco-bev.co.uk">www.marco-bev.co.uk</a>

### Electrical Installation Procedure:

- 1000651 / 656 - 2.8kW/230V ac – plug into a suitable 13A supply is required.
- 1000650- / 655 - 5.6kW/230V ac - This unit must be connected to a suitable 30A single phase power supply. This should be done by a qualified electrician.
- 1000650MJ 3.6kW/200Vac – This unit must be connected to a suitable supply.
- **This appliance must be earthed!**

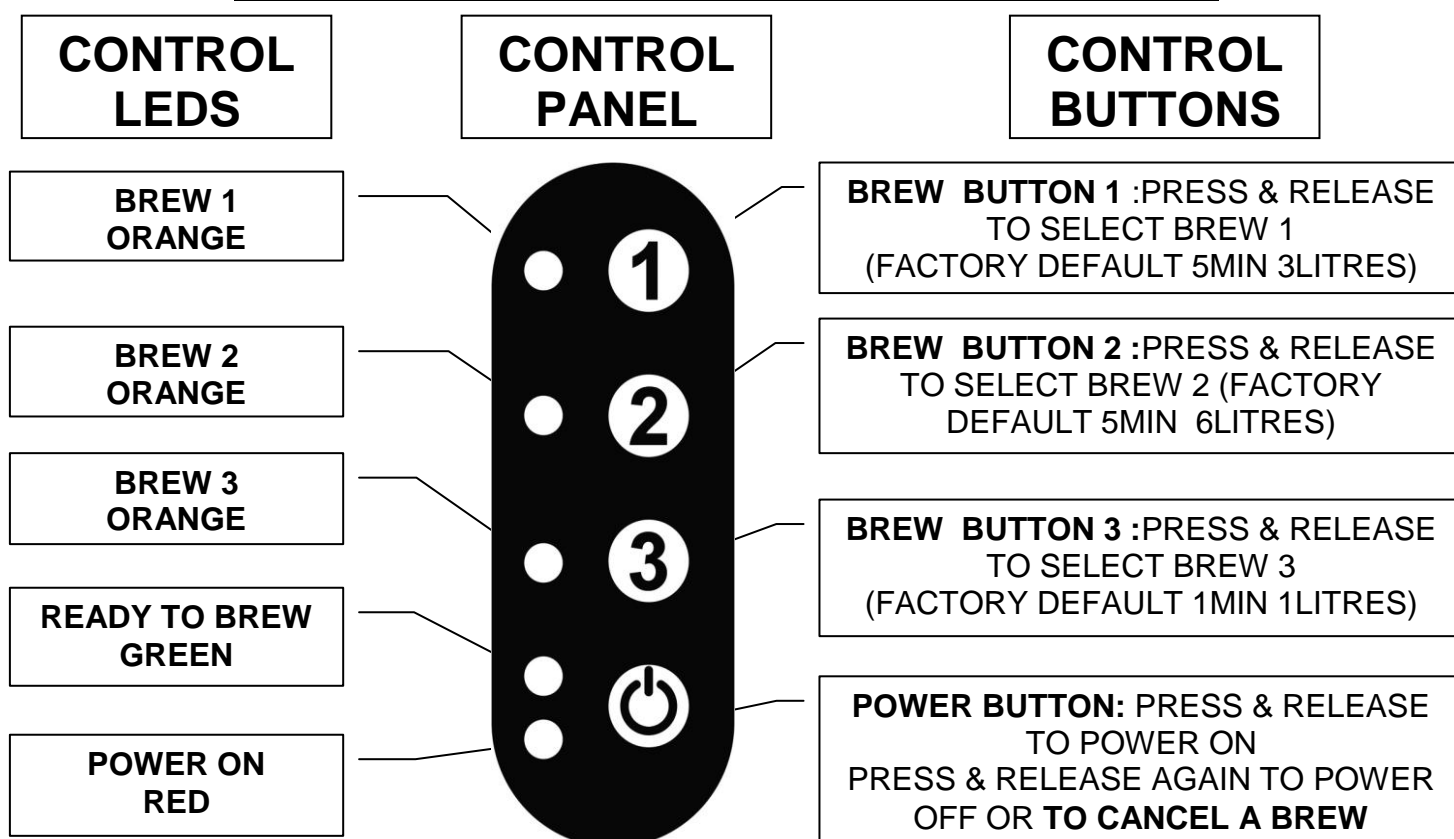
### Plumbing Installation Procedure:

- A minimum continuous flow rate of 2 Litres per minute is required for correct operation. Interruption in water flow rate can result in a lower brew volume.
- Connect Filtro Shuttle to suitable water supply using the hose enclosed.
- Connection to Filtro Shuttle is from the bottom of the unit.
- **All plumbing should be done by a qualified service engineer.**

### Start-up Procedure:

- Check that all installation procedures have been carried out.
- Switch on the power to the unit, All the LEDs on the control panel will flash momentarily.
- Switch the machine on by pressing the Power Button (See below).
- The machine will automatically take in water. The Power On LED will begin to flash until water has passed safely above the elements (~ 3 minutes).
- Heating will begin, and the Power On LED will stop flashing and glow.
- When the machine is full and ready to brew the Ready To Brew LED will glow.  
5.6kW will take ~15 - 20min, 2.8kW will take ~30 - 40 min. 3.6kW will take ~27-37min

### FILTRO/MINI SHUTTLE QUICK OPERATION INSTRUCTIONS



## **OPERATION:**

- When the machine has enough water to brew coffee and is at the correct temperature, the Ready To Brew LED will glow. A brew can be selected at this point.
- Place single filter paper into brew basket, use the 2 wire flaps to hold the filter paper in place. Add the required weight of coffee.
- Slide Brew basket into the guiderails and push fully home.
- Ensure your Urn is in place under the basket and that the hole in the basket is lined up with the centre of the urn's inlet funnel. The Filtro Shuttle is designed to accommodate the Marco Urn, Part number "1700174 Insulated Urn 6L Shuttle"
- Select the correct brew on the control panel by pressing the required Brew Button. Press the switch until the yellow LED illuminates. N.B. If you make a mistake press the Power Button to turn the machine off. Wait 3 seconds and turn back on again. Select the correct brew.
- After brewing, remove the filter paper with the spent grinds when the basket can freely move and dripping has stopped.
- Once the brew is completed the brew basket will remain locked for a further 2 minutes to allow the remaining water in the brew basket to filter through. This basket lock will be an audible click and is linked to the Brew Button LED.

## **Setting Brew Water Volumes/Water Flow Time**

With the Filtro Shuttle you may programme (Calibrate) each of the Brew Buttons to have different Water volume and Overall Brew time settings or to disable buttons.

Contact [sales@marco.ie](mailto:sales@marco.ie) for more information. Default settings may vary depending on local connection factors.

## **Pulse brewing mode:**

The Filtro Shuttle will operate in a Pulse Brewing mode. For more details about Pulse brewing mode contact [sales@marco.ie](mailto:sales@marco.ie) for more information.

**Troubleshooting:** The Power LED will indicate failures as follows.

No of flashes	Symptom	Action required
2	Water level below elements. May take 10-15 minutes to fill at low pressure	Check water pressure, if this is OK - call service agent.
3	Temperature sensor failure)	Call service agent
4	Water not heating	Call service agent
5	Temperature sensor failure	Call service agent
6	Machine not filling	Check water pressure. If this is OK and the machine has not returned to normal operation after 15 min – call service agent

### **MAINTENANCE:**

The only regular maintenance required is occasional de-scaling. In common with all water boiler manufacturers, service calls resulting from limescale are not covered by warranty. Fitting a scale reducer is recommended, especially in hard water areas. A service agent should descale the machine regularly. Marco suggest that the machine be descaled every 3 months if the unit is in a hard water area. In soft water environments every 6 months should suffice.

### **CLEANING:**

Marco recommend cleaning after each days brewing using a proprietary urn-cleansing compound. Marco Urn Cleanser (Marco Part number 8000240) is available in 800g tubs. Instructions are given on each tub. The exterior of these machines may be cleaned with a damp cloth and a light detergent. Do not use abrasive cloths or creams, as this will spoil the finish of the machine. Do not use a water jet or spray. Beware of accidentally operating the draw off tap when cleaning the front of the machine.

## **WARNINGS**

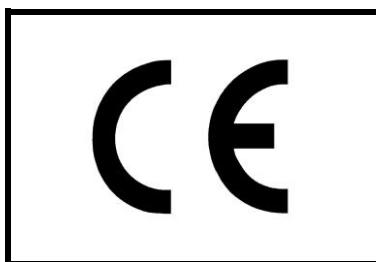
### **FLOODING WARNING:**

This machine **MUST** be positioned on a counter with a drainage facility. The machine can be operated without a basket or urn/receptacle in place which will cause water to spray/flow directly onto the counter. All potential operators should be fully trained in its correct use.

**SCALDING-** Beware of accidentally operating the brewing buttons and the water drawoff tap (if installed), especially when cleaning the front of the boiler

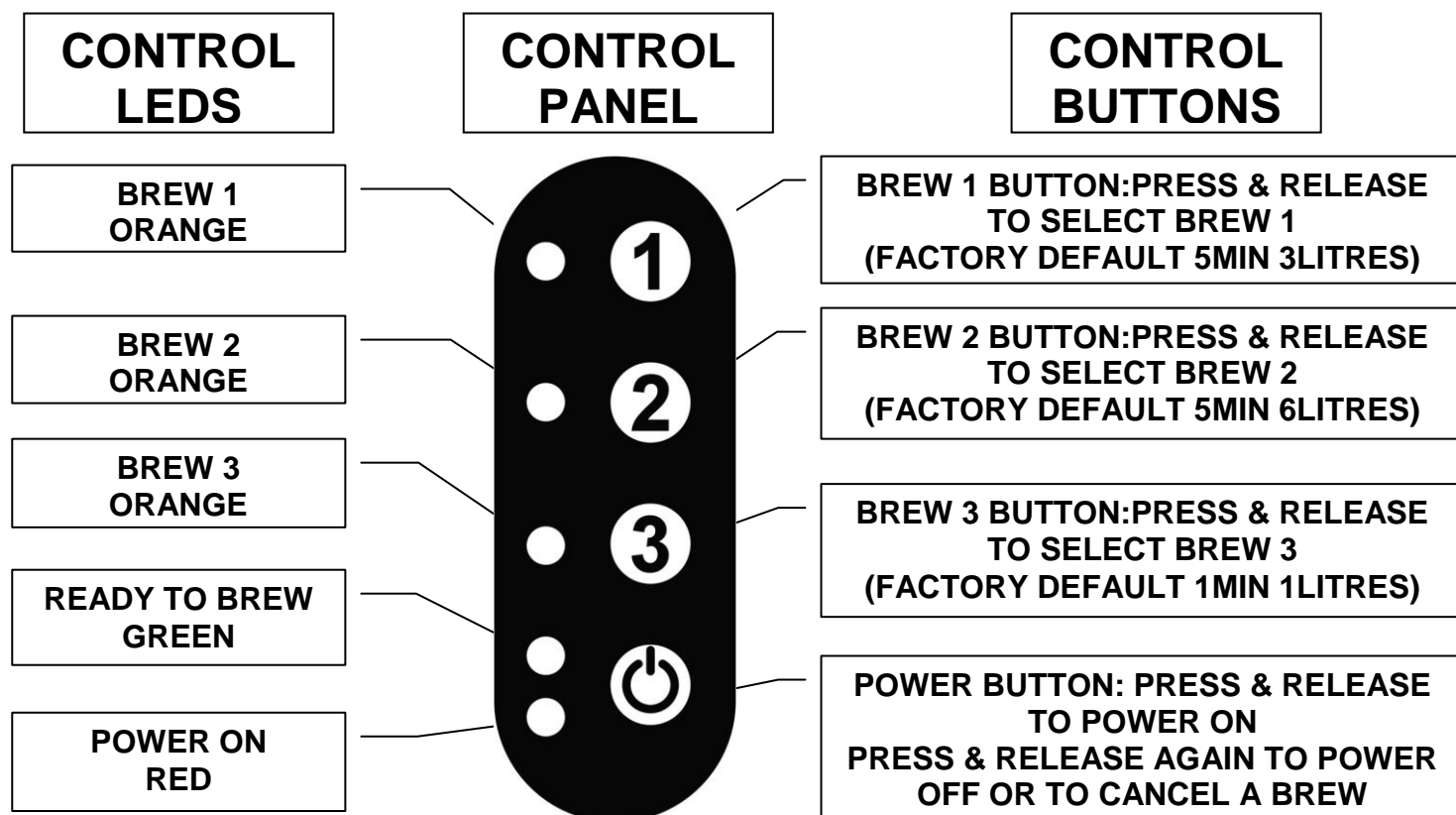
**ALL USERS OF THIS MACHINE SHOULD BE TRAINED AND SHOULD BE AWARE THAT THE MACHINE DISPENSES VERY HOT BEVERAGES/WATER.**

The utmost care has been taken in the manufacture and testing of this unit. Failure to install, maintain and or operate this boiler according to the manufacturer's instructions may result in conditions that can cause injury or damage to property. If in any doubt about the serviceability of the machine always contact the manufacturer or your supplier for advice.





# BREW CALIBRATION INSTRUCTIONS



## Setting Brew Water Volumes:

When in volume calibration mode you are selecting the overall water flow time for each brew. The sprayhead outputs approx 2L/minute which is 33.3ml/second. You can select 1, 2 or all 3 brew volumes in the one calibration session, they can be selected in any order, e.g. brew 2 could be the lowest or highest volume depending on when you press the brew 2 button. So if you want a volume of 3.5L in brew 2 you would press 2 after 1min45sec/105sec ( $33.3\text{ml} \times 105\text{s} = 3.5\text{L}$ ), see table guide.

## To Calibrate Volume:

1. Turn the brewer on by pressing the power button.
2. Press and hold any of the brew buttons for 5+ seconds, your timer should be started the moment you press the button down. (any brew button can be pressed to enter calibration mode, e.g. you could press & hold brew 1 if only calibrating brew 3)
3. The power on red LED will blink to show you are in volume calibration mode, no water will flow at this time.
4. When the desired time has passed press the corresponding brew button to select this volume for that brew.
5. When all required brews are selected turn the brewer off using the power button to save your settings.

(To disable a brew button select a water flow time of less than 10seconds.)

<b>Brew Water Volume *</b>	<b>Calibration Time Estimate</b>	<b>Recommended Brew Time</b>
1L	30sec	4min
1.5L	45sec	4min
2.0L	1min	4min
2.5L	1min 15sec (75sec)	4min
3.0L	1min 30sec (90sec)	5min
3.5L	1min 45sec (105sec)	5min
4.0L	2min (120sec)	5min
4.5L	2min 15sec (135sec)	5min
5.0L	2min 30sec (150sec)	5min
5.5L	2min 45sec (165sec)	5min
6.0L	3min (180sec)	5min

**WARNING-** The urn will overflow at volumes of over 6.2L, if preheating your urn using no coffee it is best to use a lower volume.

**NOTE- \*** A certain volume of Brew water will be retained in the coffee grinds and so the Coffee volume will be less than the Brew Water volume. This will depend on the Coffee grind and weight. Trails will be required to determine this volume. On average 1gram of coffee absorbs 2ml of water.

## Setting Brew Times:

You can select 1, 2 or all 3 brew times in the one calibration session, they can be selected in any order, e.g. brew 2 could be the lowest or highest time depending on when you press the brew 2 button. So if you want brew 2 to be 3mins press 2 after 3mins.

## To Calibrate Time:

1. Turn the brewer off by pressing the power button.
2. Press and hold any of the brew buttons for 5+ seconds, your timer should be started the moment you press the button down. (any brew button can be pressed to enter calibration mode, e.g. you could press & hold brew 1 if only calibrating brew 3)
3. The ready to brew green LED will blink to show you are in time calibration mode, no water will flow at this time.
4. When the desired time has passed press the corresponding brew button to select this time for that brew.
5. When all required brews are selected turn the brewer off using the power button to save your settings.
6. Now select a brew and measure the actual water output, if it is too low or too high a volume you can recalibrate and extend or reduce your calibration time. See next page for info on this.

## Verification of Volume Settings:

The brewer operates without a pump, a valve opens and feeds the sprayhead with water and constantly refills the tank maintaining a head of pressure which in turn controls the flow rate to the sprayhead. Brew volumes can change for 2 main reasons –firstly if a low water supply or interrupted water supply to the brewer could result in a short brew since it cannot maintain the same head of pressure (this could be a washing machine turning on during a brew cycle). Secondly if the high level probe is covered in limescale then the tank can fill slightly more than usual and result in a higher brew volume.

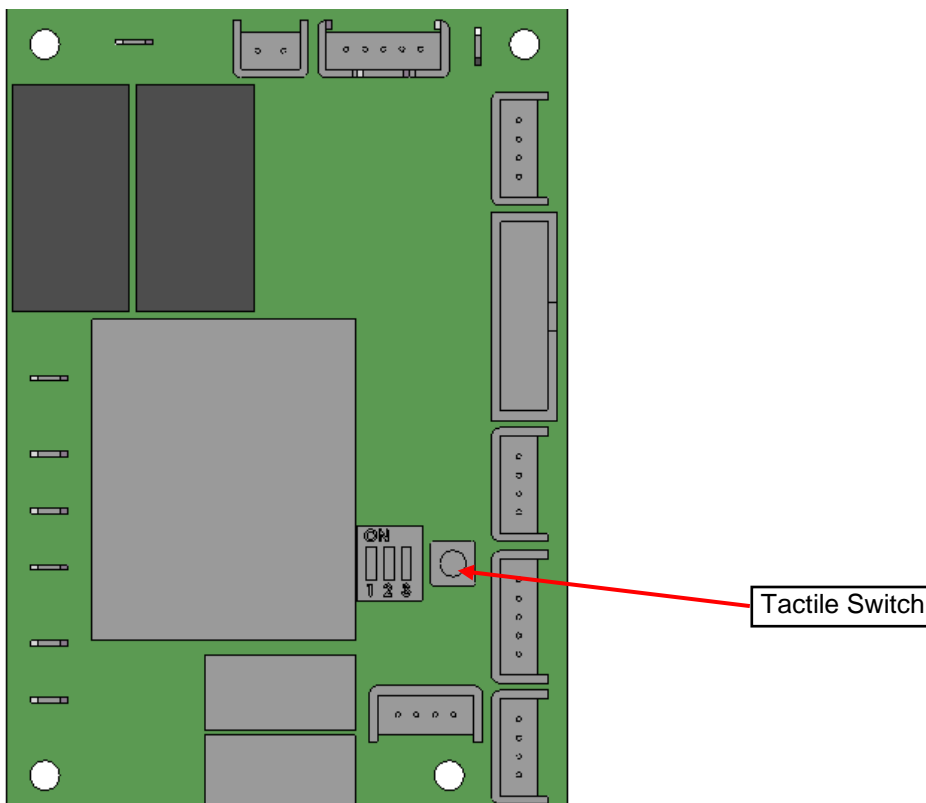
1. Select a brew and measure the actual water output, if it is too low or too high a volume you can recalibrate and extend or reduce your water flow time. e.g. if you set brew 1 to have a water flow time of 3min you would expect to get 6L (as the flow rate is approx 2L/min), if you got 6.1L then you will want to reduce it by 100ml –assuming the estimate of 33.3ml per second of time this would be a 3 second reduction from the original 3mins. So you would go to water volume settings and select a flow time of 2min 57sec.
2. If you need to recalibrate any brew button follow the calibration instruction for that button. Once you have recalibrated the required brew button press the power button to save this new setting. It is not necessary to recalibrate the other brew buttons. Pressing the power button in calibration mode will only save the settings which have been changed. All previously saved settings will remain.
3. Recalibration can be carried out on both the Volume Calibration and Brew Time Calibration settings.

# TEMPERATURE CALIBRATION INSTRUCTIONS

The PCB (1600371) is factory set to a default temperature of around 95°C.

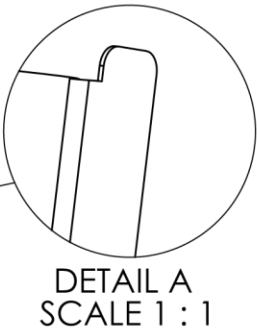
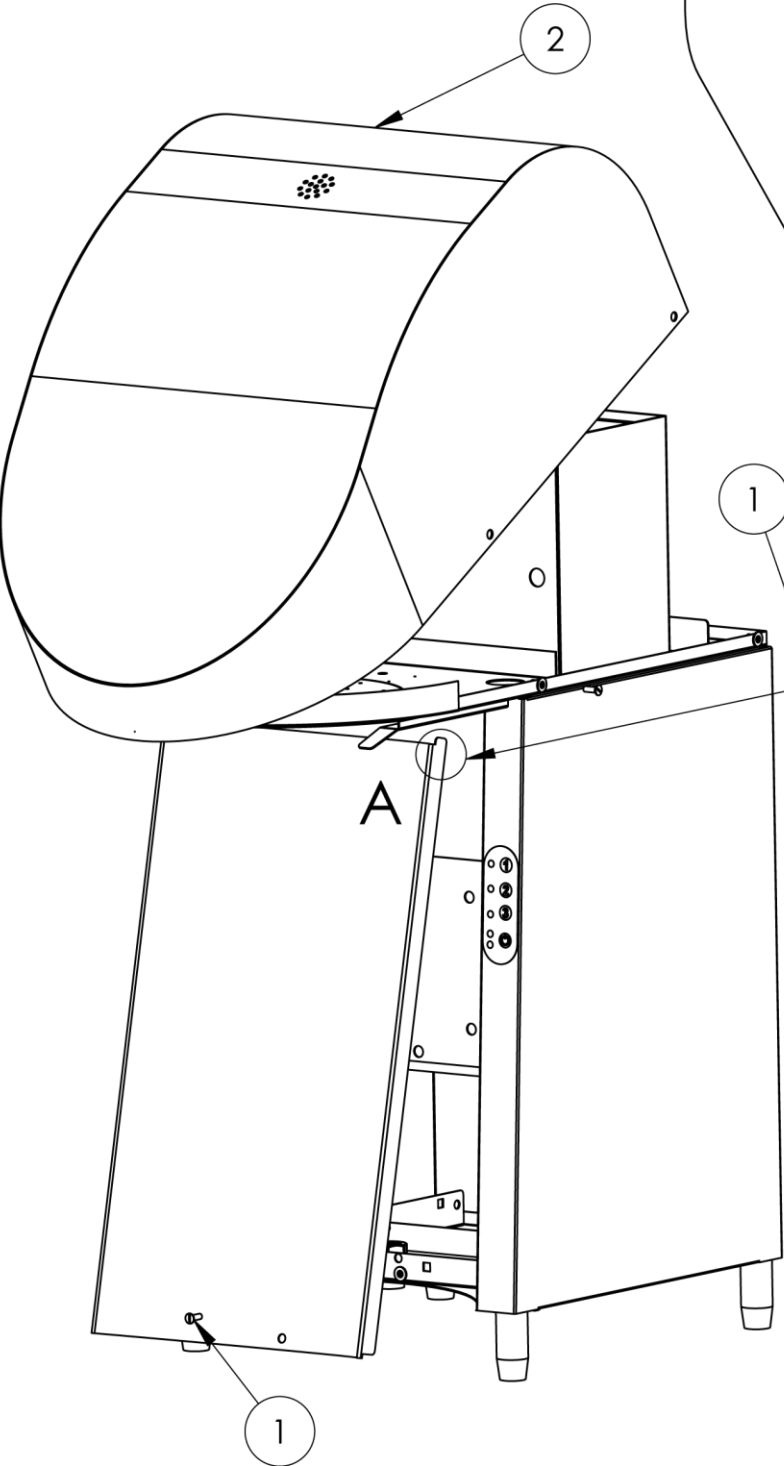
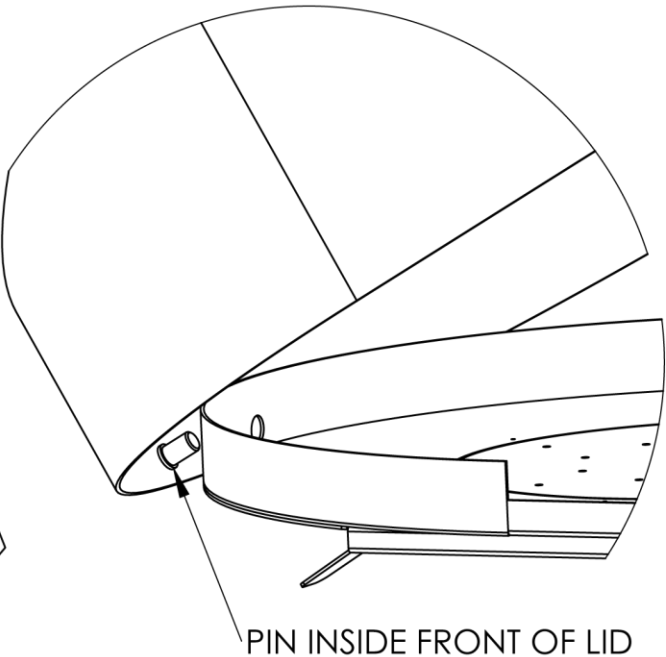
If the temperature setting needs to be modified on-site please follow the steps below:

1. To Enter Calibration mode:
  - a) Turn the machine off at the mains power supply (NOT the power button on the control panel on the side of the machine).
  - b) Then, whilst depressing the tactile switch on the PCB, turn the mains power back on.
  - c) The red & green LED's on the control panel will now blink continuously.
  - d) The machine is now in Calibration mode.
2. In Calibration Mode the machine will heat continuously until the tactile switch on the PCB is pressed for a second time (NB: The tactile switch should be pressed for at least 1 second)
3. Using a thermometer to measure the temperature at the thermistor pocket, the machine should be allowed to reach the desired set-temperature. (NB: It may be necessary to let the unit cool down if the desired set point is lower than the units current temperature)
4. Following a correct calibration procedure the tank temperature should be maintained within 3°C of the desired set-point temperature.
5. In the event of an incorrect calibration process the steps below should be followed:
6. If the tactile switch is pressed too early and the temperature is set lower than desired, the tester should simply repeat calibration.
7. If the tactile switch is pressed too late and the set temperature is too high, the tester will need to wait for the temperature in the tank to cool, or add cool water, and then repeat calibration.



ITEM NO.	PART NUMBER	DESCRIPTION	QTY
1	1401763	Screw M4 x 12mm C/Sunk S/S Slot	5
2	2300435	Lid Filtro Shuttle S/S	1

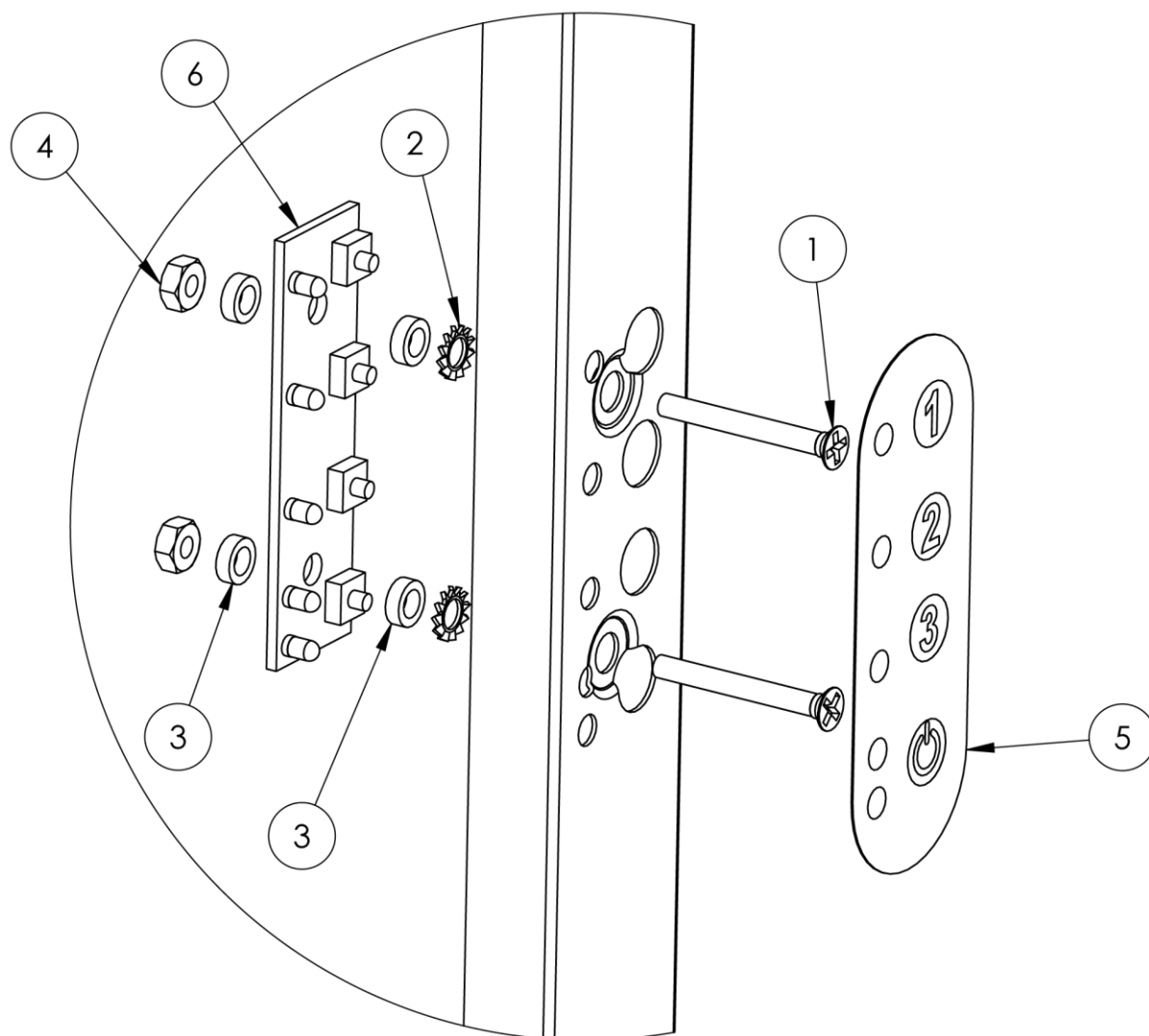
To remove the lid remove the 4 screws and pull the lid up from the back and pull forward. There is a location/support pin at the front of the lid.



To remove the front panel remove the single screw at the bottom and pull the panel forwards and downwards. There are 2 location lugs at the top of the panel which slot into the upper panel.

MACHINES
1000650
1000650COF
1000651
1000652
1000655
1000656

ITEM NO.	PART NUMBER	DESCRIPTION	QTY
1	1401811	M4 x30mm CSK	2
2	1402470	Washer Serrated M4 Zinc	2
3	1401876	Spacer Nylon 4.3x7x2.3mm	4
4	1401140	Nut M4 Brass	2
5	1900775	Label Control Domed 3 Brew Shuttle	1
6	1600356	P.C.B. 3 Brew Display Surface Mount	1



The label must be removed to take off the control PCB, if taken off with care it can be stuck back on again. The control PCB is held in place with 2 counter sunk screws. These pass through the front panel from the outside. A serrated washer is put on the inside of the surround in the order shown.

A nylon spacer is used so the LEDs and buttons are the correct distance from the label. Another nylon spacer is used at the back and secured with a brass M4 nut (this last spacer prevents electrical short circuits).

Always check the label is not pressing in the switches due to incorrect spacing distance.

MACHINES
1000650
1000650COF
1000651
1000652
1000655
1000656

DESCRIPTION:	CONTROL PCB ASSEMBLY	DWG NO.:	SHUT-031A-a	DRAWN BY	PJT	23-03-11	C.O.	583
--------------	----------------------	----------	-------------	----------	-----	----------	------	-----

ITEM NO.	PART NUMBER	DESCRIPTION	QTY
1	1502191	VALVE INLET SOLENOID 240V 3/4" 2L/min	1
2	1600371	P.C.B. Eco 3 Brew	1
3	1600368	P.C.B 24V DC Basket Lock Driver	1
4	1500840	CONTACTOR B&J 240V AC	1
5	1502000	TERMINAL 6mm	4
6	1600691	THERMISTOR ASSEMBLY	1
7	1401762	Screw M4 X 25mm Pozi Pan S/S	2
8	1401763	Screw M4 x 12mm C/Sunk S/S Slot	5
9	1401760	Screw M4 X 10mm Pozi Pan S/S	2
10	1401280	NUT M6 S/S	28
11	1401800	Tech Screw for Nylon Feet	1
12	1700310	Leg 50mm Nylon 22mm Diameter	4
13	1801230	PILLAR SUPPORT PCB	1
14	1800770	O RING CLEANOUT DOOR	1
15	1800550	Clip Hose Plastic 20.2mm Type G	2
16	1800540	Clip Hose Plastic 18.2mm Type F	5
17	1500965	Element 2.8kW 230V 90Deg Nescafe.Go	2
18	1800690	WATER INLET HOSE WHITE	1
19	1801200	Strain Relief Bush Black SR-7W-2 (for 2.8kW)	1
20	1801202	Strain Relief Screw Adjust (for 5.6kW)	1

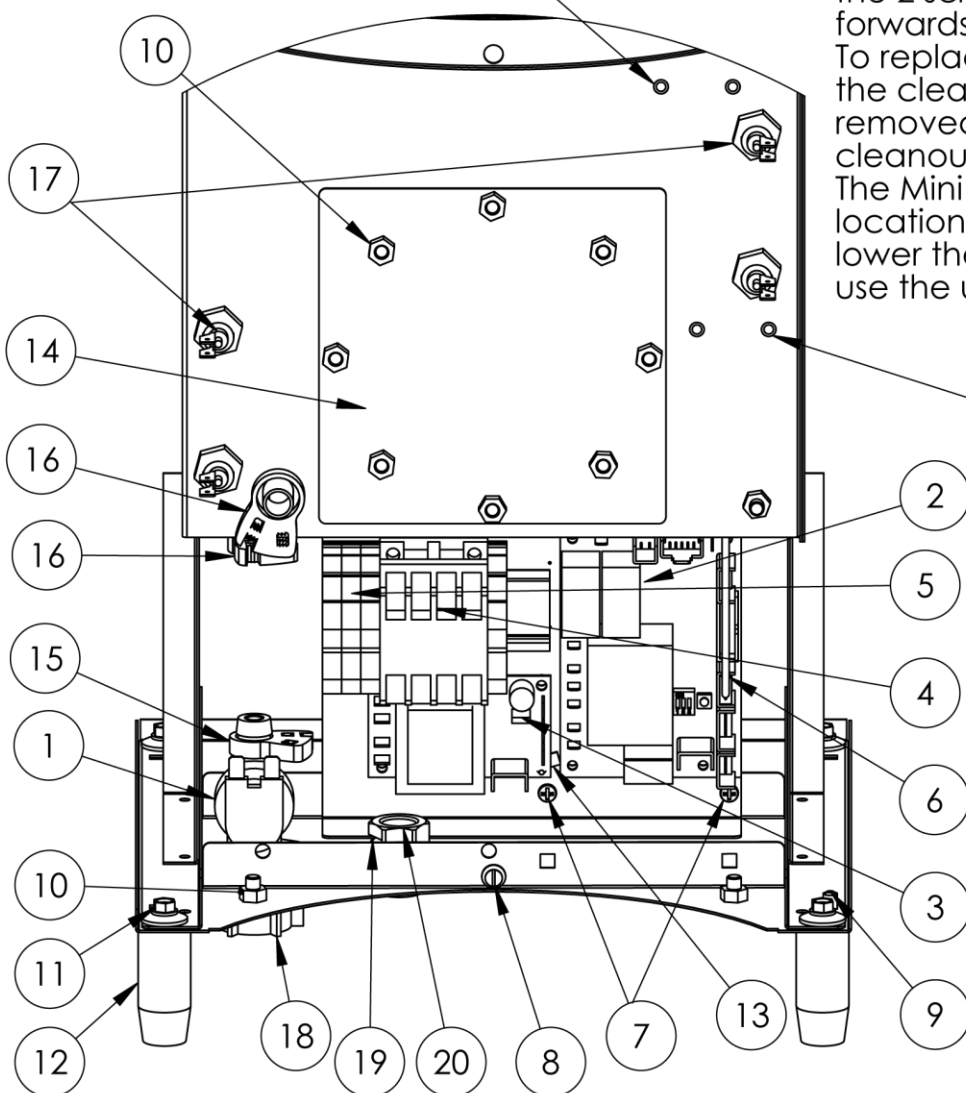
Upper thermistor pocket -use for  
5.6kW Mini Shuttle and  
2.8/5.6kW Filtro Shuttle

To remove the PCB bracket unscrew  
the 2 screws (item 7) and it can pull  
forwards.

To replace an element the 8 nuts on  
the cleanout door must be  
removed -do not overtighten the  
cleanout door nuts.

The Mini Shuttle has 2 thermistor  
locations, 2.8kW machines use the  
lower thermistor pocket, 5.6kW ones  
use the upper pocket.

Lower thermistor  
pocket -use only for  
2.8kW Mini Shuttle



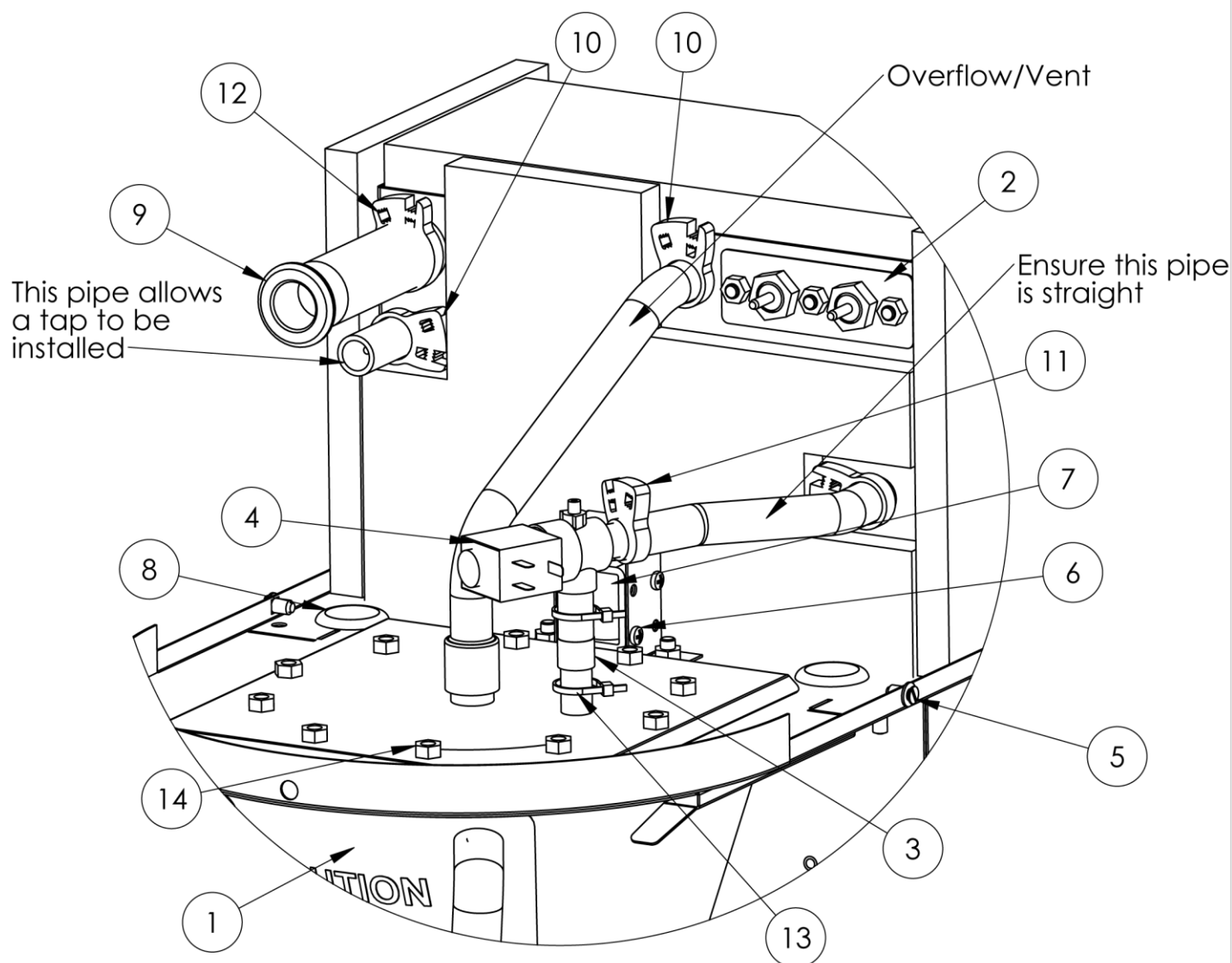
#### MACHINES

1000650
1000650COF
1000651
1000652
1000655
1000656

DESCRIPTION: LOWER INTERNAL PARTS

DWG NO.: SHUT-032A-a DRAWN BY PJT 23-03-11 C.O. 583

ITEM NO.	PART NUMBER	DESCRIPTION	QTY
1	2300088	BASKET COMPLETE 271mm x 136mm 2 HANDLES	1
2	2301341	PROBE ASSEMBLY BREWER 144/40mm	1
3	1801011	Restrictor 7.7mm Hole (12Lx15DIA)	1
4	1502158	Valve 12mm Bore 230V 30E Vent Vend	1
5	1401763	Screw M4 x 12mm C/Sunk S/S Slot	5
6	1401830	Screw M4 X 6mm S/S Pan Pozi	4
7	1502260	Solenoid 24VDC Basket Lock	1
8	1800370	GROMMET PVC 25 X 1.6 X 21mm	2
9	1401486	Plug Drain John Guest 22mm	1
10	1800540	Clip Hose Plastic 18.2mm Type F	5
11	1800550	Clip Hose Plastic 20.2mm Type G	2
12	1800555	Clip Hose Plastic 33mm Type M	1
13	1801280	Tie Wraps Natural Nylon	2
14	1401280	NUT M6 S/S	28



The 7.7mm restrictor allows a flow of approx 2Litres per minute from the sprayhead, this allows for easier calibration based on time. Ensure the silicone tube to both sides of the valve is not kinked or slack as this can effect the flow.

Ensure only 6mm screws are used on the basket lock as longer ones will cut into the solenoid coil.

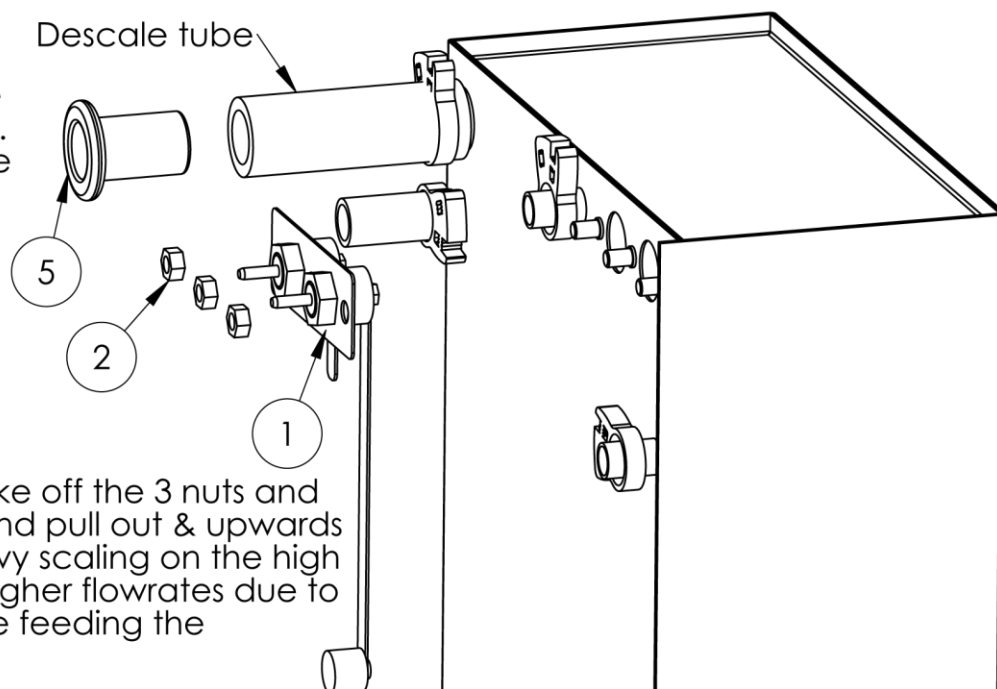
MACHINES
1000650
1000650COF
1000651
1000652
1000655
1000656

DESCRIPTION:	UPPER INTERNAL PARTS	DWG NO.:	SHUT-033A-a	DRAWN BY	PJT	23-03-11	C.O.	583
--------------	----------------------	----------	-------------	----------	-----	----------	------	-----



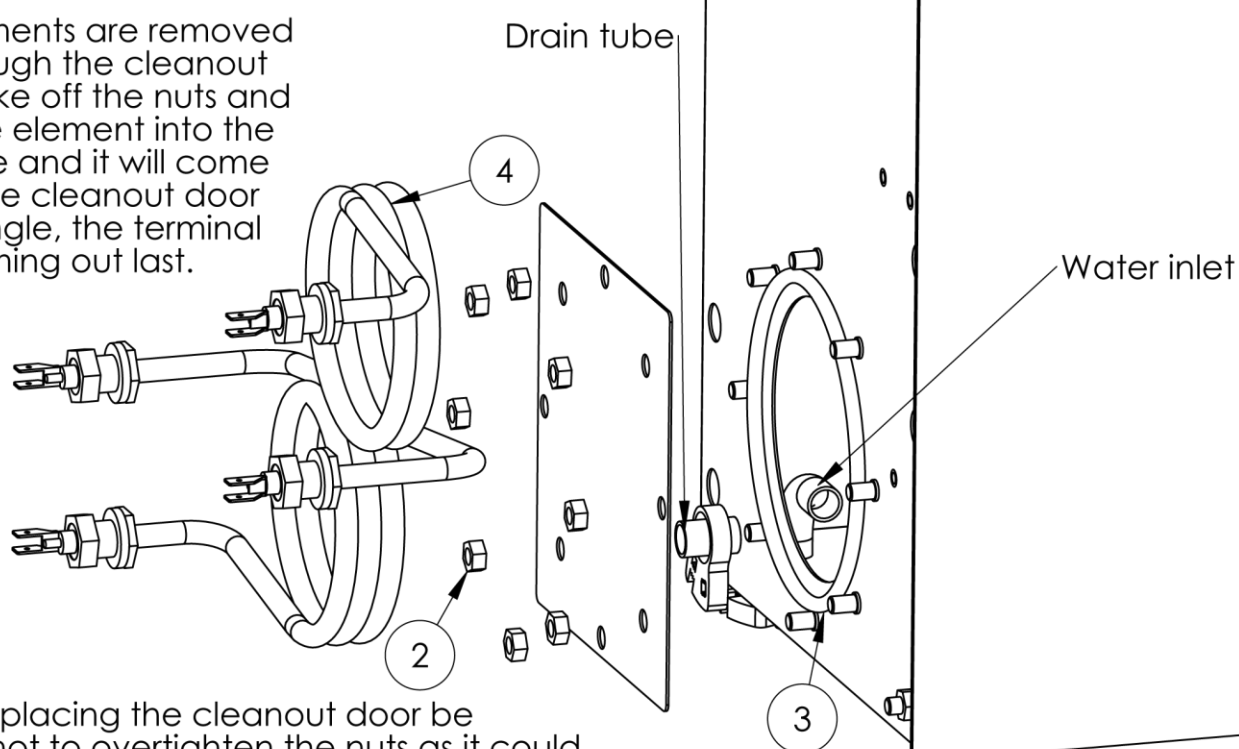
ITEM NO.	PART NUMBER	DESCRIPTION	QTY
1	2301341	PROBE ASSEMBLY BREWER 144/40mm	1
2	1401280	NUT M6 S/S	28
3	1800770	O RING CLEANOUT DOOR	1
4	1500965	Element 2.8kW 230V 90Deg Nescafe.Go	2
5	1401486	Plug Drain John Guest 22mm	1

Descal solution can be poured into the top of the machine through the large tube using a funnel. For heavy scaling remove the cleanout door and remove scale by hand. The machine can be drained via the drain at the bottom of the machine.



To remove the probes take off the 3 nuts and tilt the probe assembly and pull out & upwards out of the machine. Heavy scaling on the high level probe can cause higher flowrates due to a higher head of pressure feeding the sprayhead.

The elements are removed out through the cleanout door, take off the nuts and push the element into the machine and it will come out of the cleanout door at an angle, the terminal end coming out last.



When replacing the cleanout door be careful not to overtighten the nuts as it could break the threaded studs on the tank.

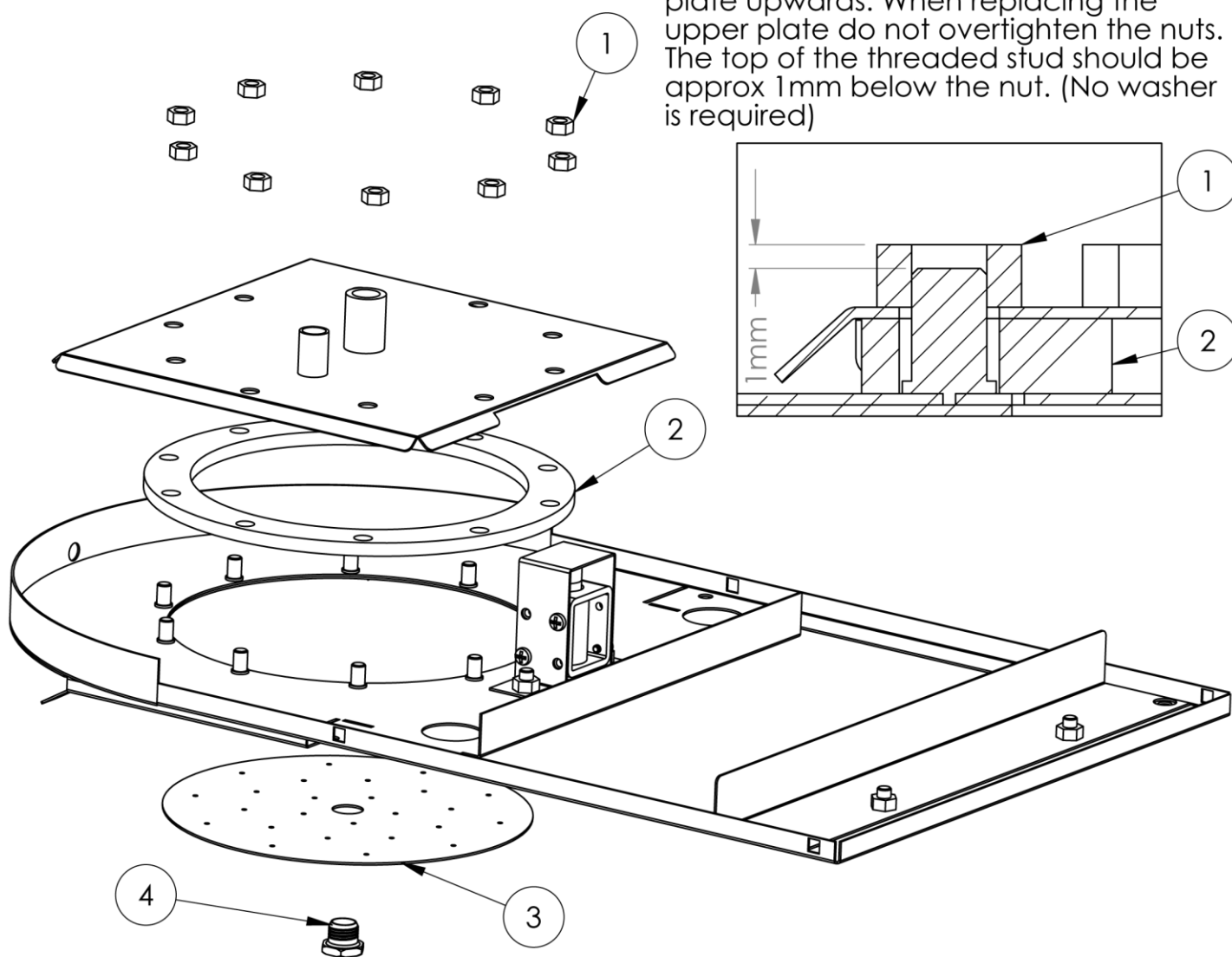
The Mini Shuttle is shown in this picture, the larger Filtro Shuttle has a water inlet tube at a higher point for temperature control. Single element machines must use the lower element and the Mini Shuttle must use the lower thermistor pocket for a single element and the higher pocket if both elements are wired.

MACHINES
1000650
1000650COF
1000651
1000652
1000655
1000656

DESCRIPTION:	DESCALING, ELEMENT AND PROBE REPLACEMENT	DWG NO.:	SHUT-034A-a	DRAWN BY:	PJT	23-03-11	C.O.	583
--------------	--	----------	-------------	-----------	-----	----------	------	-----

ITEM NO.	PART NUMBER	DESCRIPTION	QTY
1	1401280	NUT M6 S/S	14
2	1800301	GASKET SPRAYHEAD 186x146x6mm	1
3	SHUT-022F	SPRAYHEAD DISC	1
4	1400065	Adaptor 1/8 F X 1/4 M(Gauge)	1

To replace the gasket first remove the sprayhead disc at the bottom by removing the adaptor (item 4), now remove all 10 nuts and pull the upper plate upwards. When replacing the upper plate do not overtighten the nuts. The top of the threaded stud should be approx 1mm below the nut. (No washer is required)



When replacing the sprayhead plate be careful not to overtighten the fitting as it will bend the disc and effect the flow rate. It should be tightened just enough so the basket can be freely inserted & removed.

MACHINES
1000650
1000650COF
1000651
1000652
1000655
1000656

DESCRIPTION: SPRAYHEAD ASSEMBLY	DWG NO.: SHUT-035A-α	DRAWN BY: PJT	23-03-11	C.O. 583
---------------------------------	----------------------	---------------	----------	----------

## **TROUBLESHOOTING – DIAGNOSTIC GUIDE:**

The Filtro/Mini Shuttle uses an electronic diagnostic system to help determine faults. If an error is detected a sequence of flashes is displayed through the POWER light. The length of time and recovery method of each of these flashing displays is detailed below:

### **2 FLASH CYCLE – BELOW LOW LEVEL**

Display pattern:

- 2 quick flashes then a short pause - repeated.

Electronic check and action:

- This indicates that the low level circuit is open i.e. the probe is not in contact with the water.
- The element is switched OFF at this stage and the inlet is left ON. (note that if this is a low level probe wiring fault, the water will stop at the high level probe regardless of the status of the low level).
- This is a recoverable error i.e. the machine does not need to be reset when the problem is solved. (e.g. if a closed mains water stop valve is the problem, opening the valve will allow water into the machine and normal function will resume when the low level probe is reached)

Probable causes:

1. The water level is below the low level probe, which is normal when the machine fills for the first time as the low level probe is quite high. (Can take 10+mins to fill)
2. The low level probe wire is disconnected, or there is another wiring fault (e.g. a bad earth (return) connection between the PCB and the Tank)

Action required:

1. Check that the water pressure is OK and ensure that the stop valve is open.
2. Check that the inlet solenoid is working.
3. If the water level is above the level of the low probe, check the probe circuit wiring

### **3 FLASH CYCLE – THERMISTOR OPEN CIRCUIT**

Display pattern:

- 3 quick flashes then a long delay (up to 15 seconds) - repeated.

Electronic check:

- This indicates that the Thermistor is measuring such a large resistance that it assumes the thermistor circuit is open.
- The element and inlet valve are turned OFF when this error is detected
- This is a recoverable error. When the correct range of resistance is measured, normal operation resumes

Probable causes:

1. The thermistor probe is unplugged from the 4way connector on the PCB or the thermistor has failed open circuit.

Action required:

1. Check that the thermistor is plugged in to the PCB correctly. If it is, replace the thermistor.

### **5 FLASH CYCLE – THERMISTOR SHORT CIRCUIT**

Display pattern:

- 5 quick flashes then a short pause - repeated.

Electronic check:

- This indicates that the Thermistor is measuring zero resistance. It assumes the thermistor has failed short circuit.
- The element and inlet valve are turned OFF when this error is detected
- This is a recoverable error. When the correct range of resistance is measured, normal operation resumes.

Probable causes:

1. The thermistor has failed.

Action required:

1. Replace the thermistor.







## SPARE PARTS LIST

Part Number	Description
1600371	P.C.B. Eco 3 Brew
1600368	P.C.B 24V DC Basket Lock Driver
1600356	P.C.B. 3 Brew Display Surface Mount
1500840	CONTACTOR B&J 240V AC
1502260	Solenoid 24VDC Basket Lock
1502158	Valve 12mm Bore 230V 30E Vent Vend
1502190	Valve Inlet Solenoid 240V 3/4" 2L/min
1600691	Thermistor Assembly
1500975	Element 2.8kW 230V 90Deg Nescafe.Go
2301341	Probe Assembly Brewer 144/40mm
2100315	Tap Tom Small Red Hot Water
2300086	Basket Complete 271x136mm 2 Handles
1800301	Gasket Sprayhead 186x146x6mm
1700310	Leg 50mm Nylon 22mm Diameter
1401800	Tech Screw for Nylon Feet
1401140	Nut M4 Brass
1402470	Washer Serrated M4 Zinc
1401876	Spacer Nylon 4.3x7x2.3mm
1401763	Screw M4 x 12mm C/Sunk S/S Slot
1900775	Label Control Domed 3 Brew Shuttle
1800690	Water Inlet Hose WRC
8000240	Urn Cleanser (800g Tub)
1700174	Insulated Urn 6L Shuttle Branded
1700225	Sightglass 15.5mm OD x278mm Shuttle

